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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/850,254	05/07/2001	Hisamitsu Kimoto	N13476100S	1494

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EXAMINER

QUINTO, KEVIN V

ART UNIT PAPER NUMBER

2826

DATE MAILED: 09/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/850,254

Applicant(s)

KIMOTO, HISAMITSU

Examiner

Kevin Quinto

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-6, 9, 10, 12 and 14-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3 is/are allowed.
- 6) ☒ Claim(s) 9 and 10 is/are rejected.
- 7) ☒ Claim(s) 4-6 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. The amendment filed July 28, 2003 has been entered.
2. Applicant's arguments with respect to claims 3-6, 9, 10, and 12 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claim 5 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 5 contains limitations which are already present in its parent claim (claim 3). These limitations are "the multi-layer wiring configuration includes a second one of the plurality of wiring layer" and "the second one of the plurality of wiring layers has a higher sheet resistance than the first one of the wiring layers."
4. Claim 9 is objected to because of the following informalities: the phrase "a second one of the plurality of wiring layers of the plurality of wiring layers" appears to be redundant. Appropriate correction is required.
5. Claim 12 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper

dependent form, or rewrite the claim(s) in independent form. Claim 12 contains limitations which are already present in its parent claim (claim 9). These limitations are "the multi-layer wiring configuration includes a second one of the plurality of wiring layer" and "the second one of the plurality of wiring layers has a higher sheet resistance than the first one of the wiring layers."

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (USPN 5,300,798) in view of Iyer et al. (USPN 5,733,816).

8. With regard to claims 9 and 10, Yamazaki et al. (USPN 5,300,798, hereinafter referred to as the "Yamazaki" reference) discloses a similar device. Figure 3 of Yamazaki discloses a semiconductor apparatus having a plurality of functional circuit blocks (3-9) which are disposed in a matrix on a surface of a semiconductor substrate (1). Each functional circuit block has a plurality of device elements, a first wiring region, and a second wiring region. The device has a multi-layer wiring configuration with a plurality of wiring layers for electrically connecting predetermined device elements. The multi-layer wiring configuration has a first one (AL3) of the plurality of wiring layers disposed in the first wiring region in a first direction. The first one (AL3) of the plurality

of wiring layers is disposed in the second wiring region in a second direction. The first direction is orthogonal to the second direction. A first portion of the first one (AL3) of the plurality of wiring layers is electrically connected to and disposed in parallel with wiring in second one (AL1) of the plurality of wiring layers. The applicant has disclosed tungsten as a material which has a higher sheet resistance and higher melting point than aluminum (specification, Background of the Invention, p.2, lines 7-13). Yamazaki discloses the use of tungsten as a possible material for the wiring (column 14, lines 10-16) but does not disclose the use of tungsten or titanium in one wiring layer and aluminum in another wiring layer. However the use of either tungsten or titanium with aluminum in a multi-level wiring scheme is well known in the art. Iyer et al. (USPN 5,733,816, hereinafter referred to as the "Iyer" reference) discloses that tungsten or titanium is often used for their high melting point properties in early fabrication steps since semiconductor fabrication takes place in elevated temperature steps with aluminum being used in upper wiring layers (column 1, lines 42-56). In view of Iyer, it would therefore be obvious to use tungsten or titanium in the lower wiring layers (AL1, AL2, or the second one of the wiring layers) and aluminum in the upper wiring layer (AL3, or the first one of the plurality of wiring layers) in figure 3 of Yamazaki in order to accommodate general integrated circuit processing techniques. Thus the device of Yamazaki constructed in view of Iyer meets the claim limitations with regard to resistance and melting point.

Allowable Subject Matter

9. Claim 3 is allowed.
10. Claims 4 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
11. The following is a statement of reasons for the indication of allowable subject matter: the examiner is unaware of any prior art which suggests a semiconductor device having the horizontal and vertical section wiring layout and material requirements as claimed by the applicant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (703) 306-5688. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

KVQ